Cryosophila macrocarpa (Palmae), a New Species from Chocó Department, Colombia

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ABSTRACT. A disjunct population of *Cryosophila* recently discovered in the Colombian Chocó is morphologically quite distinct from previously described *Cryosophila* species. Unique to the genus are its large fruits with large, deeply furrowed seeds. This new *Cryosophila*, *C. macrocarpa*, appears to be most closely allied to *C. guagara* of the Golfo Dulce area of Costa Rica and adjacent Panama.

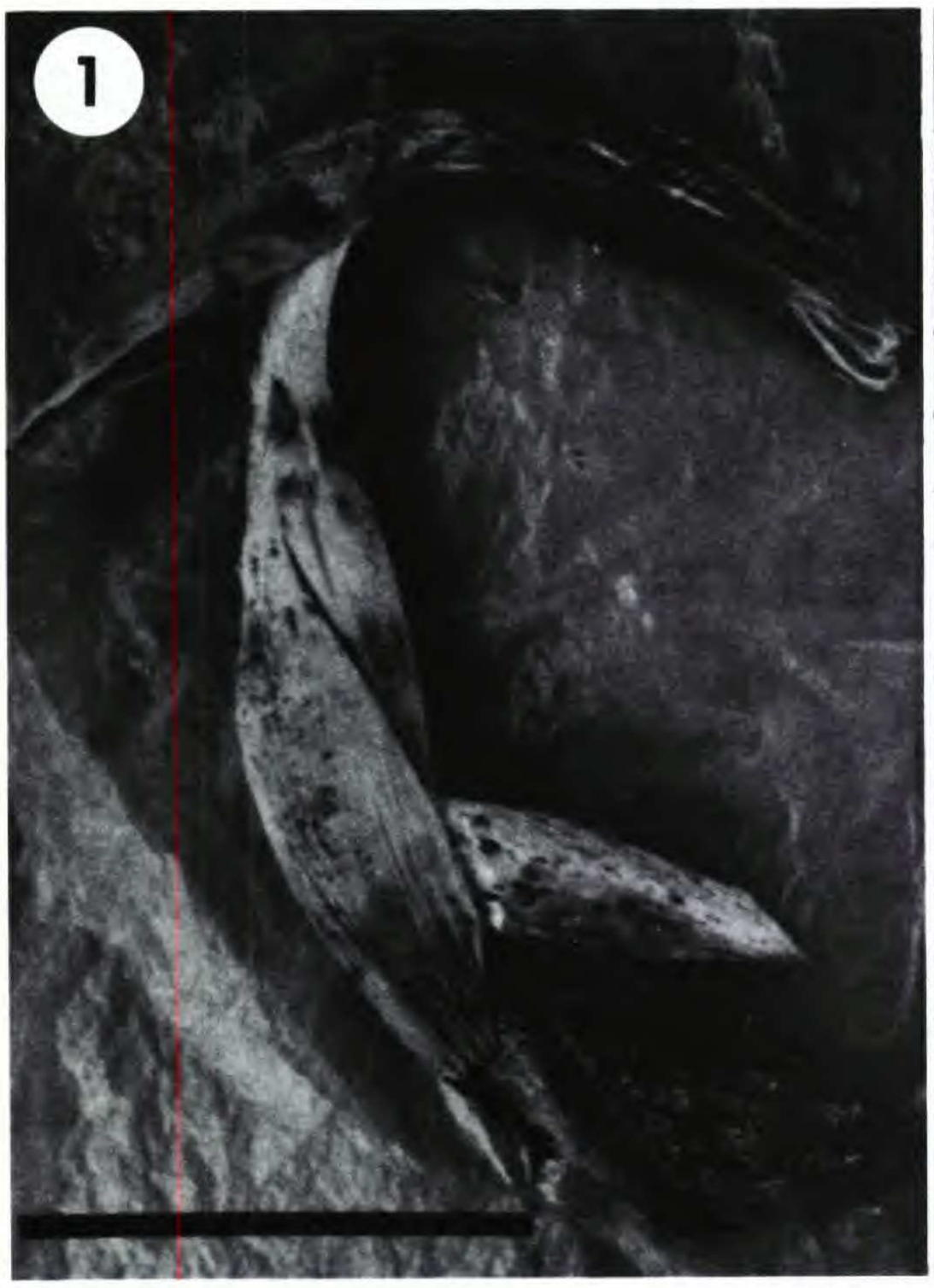
Cryosophila Blume comprises approximately 11–13 mostly narrowly endemic species of understory, primarily lowland wet forest palms distributed from Pacific coastal and southern Mexico to northwestern Colombia. The most distinctive generic characteristic is the usually branched, often numerous and long spines derived from roots that grow out of the normally solitary stem. Although the generic limits of *Cryosophila* are well defined, its species are poorly delineated. The difficulty arises because there are few characters that differentiate species. Most characters are either invariant (e.g., most floral characters) or continuously variable (e.g., the pattern and degree of stem armature and leaf blade splitting) across the genus. The most important diagnostic features are inflorescence shape and structure. Few species can be identified sterile, even in the field.

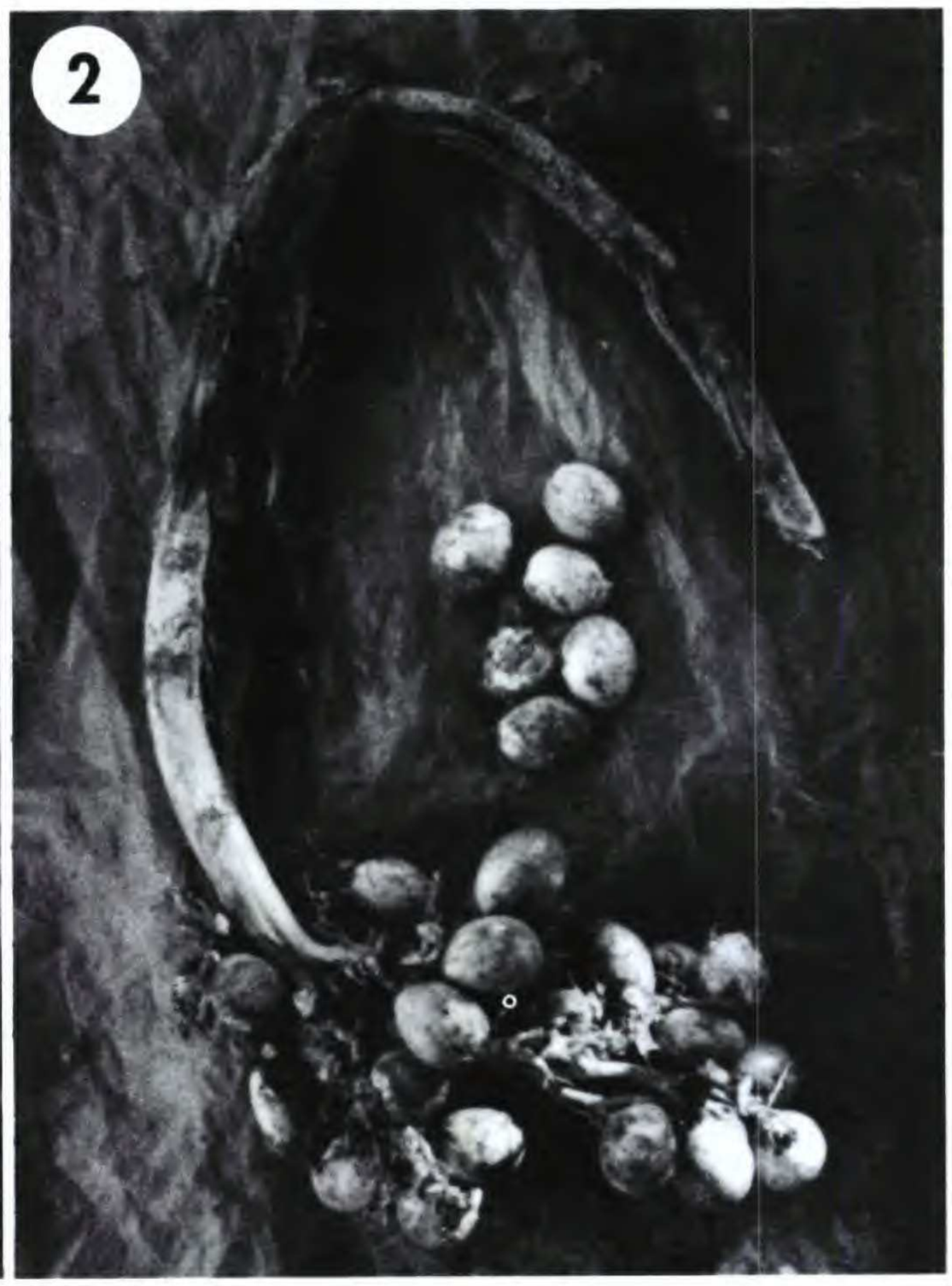
G. Galeano and R. G. Bernal (both of COL) recently discovered a disjunct Pacific coastal *Cryosophila* population (sterile at the time) near the town of El Valle in the Department of Chocó. While in Colombia conducting field studies as part of a monograph of the genus, I collected fertile material from this population possessing characteristics that clearly differentiate it from previously described species of *Cryosophila*.

Cryosophila macrocarpa R. Evans, sp. nov. TYPE: Colombia. Chocó: ca. 300 m S of Bahía Solano–El Valle road ca. 2 km from El Valle (ca. 500 m E of the bridge over Quebrada Tundó), elev. ca. 20 m, 6°07′30″N, 77°25′W, 6 Mar. 1991, *R. J. Evans & J. G. Ramírez 213* (holotype, COL; isotypes, JAUM, MICH, MO). Figures 1, 2.

A congeneribus fructibus majoribus (3.1–3.6(–3.7 in statu vivo) cm longis, 2.6–2.9(–3.0 in statu vivo) cm latis) et seminibus majoribus (2.5–2.7 cm longis, 2.1–2.3 cm latis) testis profunde sulcatis differt.

Solitary palm. Stem ca. 5 m long, erect or briefly decumbent, ca. 12 cm DBH, armed with root-spines distributed uniformly or not along length of stem; internodes not discernible. Root-spines 0–ca. 100 per 10 cm of stem, most to 18 cm (average 6–8 cm) long, occasional outliers to 55 cm long, almost always 1–2-times branched, usually descending, growing into soil at the stem base. Leaves ca. 30 in a spreading crown, ca. 6 distal to youngest inflorescence, 7–16 dead and pendulous; petiole rounded abaxially, channeled adaxially, 2.80–3.05 m long, 2.38–2.57 cm wide (fresh) at narrowest point just proximal to blade, splitting basally with age; basal sheath cream-colored, densely floccose, disintegrating and fraying into elongate fibers over time; hastula elevated, blunt, very depressed-triangular, 0.1–0.7 cm long, 2.9–3.8 cm wide, dorsally plicate and carinate; blade induplicately palmate, very broadly ovate in outline, 0.200–0.225 mm thick (fresh) adjacent to central margin 10 cm from apex of most recently fully expanded leaf, adaxial surface glabrous, abaxial grayish pubescent; central segments 126.5–158.0 cm long; lateral segments 85.0–110.5 cm long, ca. ⅔–¾ as long as central segments; central abaxial split to within (2.5–)4.0–6.0 cm of base, dividing blade into two ± equal halves of 29–32 segments each; primary adaxial splits less deep than central abaxial split with depth of splitting increasing from inner (ca. ¾–⅞ to base) to outer splits, dividing each half into 6–7 sections of 2–10 segments each, with the central sections containing (5–)8–10 segments each, the middle 3–4 sections of each half containing (3–)4–5(–6) segments each, and 2 the lateral-most sections of each half containing (2–)3–4(–5) segments each; secondary adaxial splits ¼–½(–⅔) to base; inner ca. 4 sections of each half fully divided; lateral section undivided; segments widest (4.1–4.6 cm wide ca. 40 cm from apex) near central abaxial split, narrowing toward the lateral segment, sometimes with slight constric-





Figures 1, 2. *Cryosophila macrocarpa* R. Evans (*Evans & Ramírez 213*). —1. Inflorescence with aborted flowers. —2. Infructescence with mature fruit. Scale bar = 20 cm.

tion distally, briefly bifid and often sub-sickle-shaped and diverging apically; longitudinal veins 10–14 per half-segment, 0.9–3.3 mm apart at widest portion (ca. mid-segment) of widest segments; longitudinal veinlets 3–7 between adjacent veins, 0.2–0.6 mm apart; irregular transverse commissures connecting longitudinal veins abundant and conspicuous abaxially and adaxially. Inflorescences with 3 orders of branching, interfoliar, ascending at emergence through split petiole base, then abruptly deflected; primary axis 62–78 cm long, cream-colored, densely floccose, 1.15–1.29 cm diam. at juncture of peduncle and rachis; prophyll lanceolate with truncate, sheathing base and acuminate apex, bicarinate, 23.5–25.5 cm long, persistent; inflorescence bracts with tubular base and cochleariform, apically acuminate blade, cream-colored, densely floccose, the 2 basal-most bracts ovate when detached and flattened, ca. 31 cm long, the bracts progressively smaller, particularly in width, toward apex, apical bracts very narrowly obovate; peduncle 50.0–57.5 cm long; peduncular bracts 4, persistent; peduncular bract scars slightly oblique; rachis 12.0–20.5 cm long; first-order branches ca. 10, broadly flattened perpendicular to primary axis, irregularly divided, to 7.5 cm long near base of rachis, shortening toward apex, each subtended by a deciduous bract; rachis bracts caducous apically, progressively more persistent toward base of rachis; rachis bract scars strongly oblique; rachillae to 5 cm long near base of rachis, shortening toward apex; rachillae bracteoles sheathing basally, irregularly shaped, 4.5–8.5 mm long, 0.5–1.5 mm wide just distal to basal sheath. Flowers perfect, 4.9–5.4 mm long, 3.8–4.8 mm diam., borne singly on pedicels 1.0–1.5 mm long, each subtended by a narrowly triangular to triangular bracteole 1.0–1.4 mm long, 0.4–0.7 wide; receptacle 0.6–0.8 mm long; sepals 3, acute, 4.3–5.3 mm long, connate basally ca. ⅓–½ their length; petals 3, cochleariform, thickened at center, hyaline at margin, stipitate, 2.6–3.1 mm long, 3.4–4.4 mm wide and flabelliform when detached and flattened, imbricate, adnate to calyx basally; stamens 6; filaments flat, 2.8–3.3 mm long, connate nearly to their apices in a hyaline, membranous, narrowly ampulliform tube 1.4–1.8 mm diam.; anthers briefly bifid at base and apex, 1.6–2.0 mm long, 0.6–0.9 mm wide, cream-colored, dehiscent laterally by longitudinal slits; carpels 3; ovary ca. 1 mm long, 0.5–0.7 mm diam.; stigma + style 1.9–2.8 mm long; stigma slightly expanded. Fruit oval, 3.1–3.7 cm long, 2.6–3.0 cm diam., cream-colored at maturity,

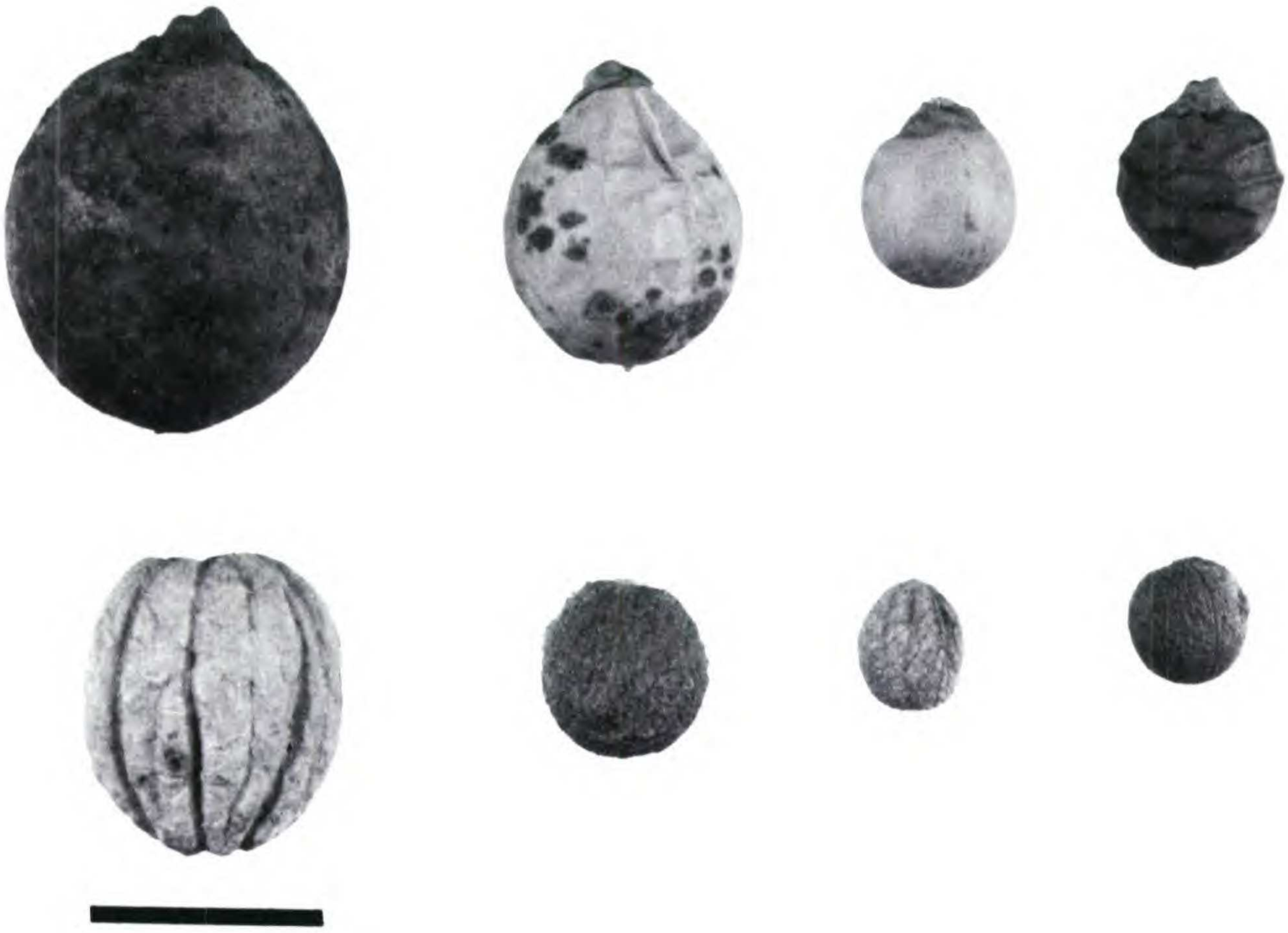


Figure 3. *Cryosophila* fruits (upper row) and seeds. Left to right: *C. macrocarpa* (*Evans & Ramírez 213*), note deeply sulcate testa; *C. warscewiczii* (*B. Jacobs 2351*), the second-largest-fruited *Cryosophila*; *C. guagara* (*Evans 207*), note shallow sulci; *C. kalbreyeri* (*Ramírez & Echavarría 3586*), the only other previously described Colombian *Cryosophila*. Scale bar = 2 cm.

epicarp smooth, mesocarp slightly fleshy, endocarp membranous; seed oval, 2.5–2.7 cm long, 2.1–2.3 cm diam., not adherent to the endocarp, the testa deeply sulcate.

Common name: Nolí, but this name is also used in the area for *Chelyocarpus dianeurus* (Burret) H. E. Moore, a much more common palmate-leaved palm. *Uses:* leaves used as thatch.

Additional specimen examined. Same population and date as holotype, *R. J. Evans & J. G. Ramírez 214* (BH, MICH, NY, US).

Known only from the type locality, an area of slightly disturbed lowland wet forest in the flood plain of the Río Valle near the northern extremities of the Golfo de Tribuga. Extensive primary forest remains in the immediate area as well as most of the entire Golfo de Tribuga coastal region, due to its remoteness. The area is very poorly known botanically and therefore *Cryosophila macrocarpa* may occur throughout the region. However, within its known bottomland habitat *C. macrocarpa* is very rare and localized, apparently occurring only in scattered small populations. *Cryosophila macrocarpa* does not occur on the nearby slopes where *Chelyocarpus dianeurus* is very common (nor does *Chelyocarpus dianeurus* occur in the bottomlands with *Cryosophila macrocarpa*). One local resident, knowledgeable enough to distinguish between these two superficially similar palmate-leaved species, reported *C. macrocarpa* to be more common on Cabo Corrientes than in the El Valle area. Cabo Corrientes delimits the southern end of the Golfo de Tribuga about 70 km to the south.

The large fruits and seeds with deeply sulcate seed coats of *Cryosophila macrocarpa* readily differentiate it from all other *Cryosophila* species (Fig. 3).

Cryosophila macrocarpa is morphologically most similar to *Cryosophila guagara* P. Allen of the Golfo Dulce and adjoining areas of southwestern Costa Rica and adjacent Panama. Character states shared by *C. macrocarpa* and *C. guagara* are abundant leaf blade cross-veins that are conspicuous both

adaxially and abaxially; short, broad, and flattened first-order inflorescence branches; and filaments that are connate nearly to their apices. *Cryosophila macrocarpa* inflorescences differ from those of *C. guagara* by their fewer peduncular bracts (4 in *C. macrocarpa* vs. 7–10 in *C. guagara*) and their comparatively shorter rachises containing fewer first-order branches (rachis $\frac{1}{5}$–$\frac{1}{4}$ the total inflorescence length containing ca. 10 first-order branches in *C. macrocarpa* vs. rachis $\frac{1}{3}$–$\frac{2}{3}$ the total inflorescence length containing ca. 30 first-order branches in *C. guagara*).

Whether or not the phenetic similarity between *C. macrocarpa* and *C. guagara* represents a close phyletic relationship should be resolved by a phylogenetic analysis of *Cryosophila* species (Evans, in prep.). If *C. macrocarpa* and *C. guagara* are demonstrated to be sister species within the genus, this would be another example indicating the floristic affinities between the Pacific lowland wet forests of the mostly Costa Rican Golfo Dulce area and the Colombian Chocó (Hartshorn, 1983).

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